Spectrum Sharing in 3.5 GHz Using Advanced Beaconing

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Radar, Commercial Comms Spectrum Sharing in 3550-3650 Bands in the US Using IEEE 802.22.1 Advanced Beaconing

Objective

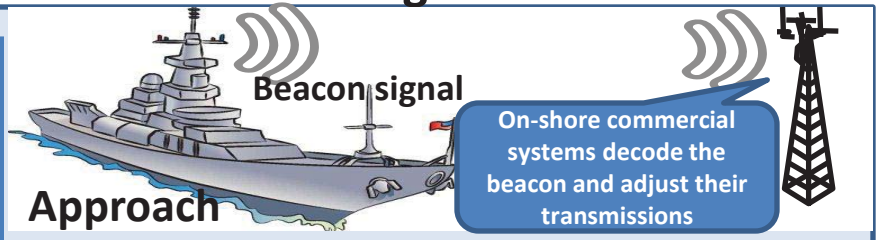
To Create NATIONAWIDE availability of the 3550-3650 MHz Band using IEEE 802.22.1 advanced beaconing approach

Current Plan: The current plan is the use of exclusion zones to protect U.S. Navy coastal operations and other Department of Defense test and training areas. This means that major part of the US population will not be able to use these bands.

Alternatives: However, there may be some other approaches which will make 100 MHz of spectrum available nation-wide, and especially in the coastal areas where significant US population resides.

Background

3550 – 3650 MHz Band: One of the portions of the spectrum identified to achieve the goal of freeing up 500MHz of spectrum, is the 3550-3650 MHz where maritime radars have been deployed.



Use of Advanced Beaconing Approach: Neither spectrum sensing or database driven approaches are suitable for this type of spectrum sharing. However, ***advanced beaconing approaches, such as the one developed in the IEEE Standard 802.22.1 for spectrum sharing between the primary signals and incumbent signals may be used*** for the 3550-3650 band.

Deployment Strategy

Regulators have realized that beaconing is a viable option for spectrum sharing. ***The IEEE 802.22.1-2010™ standard has been completed and is being revised for protection of radars and satellite earth stations***

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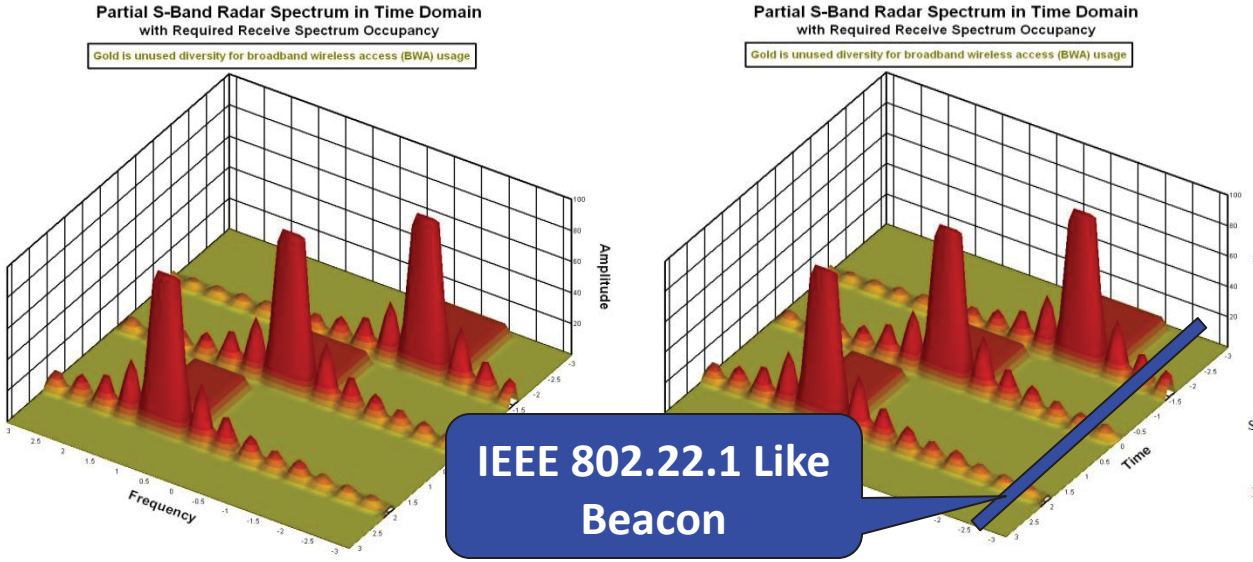
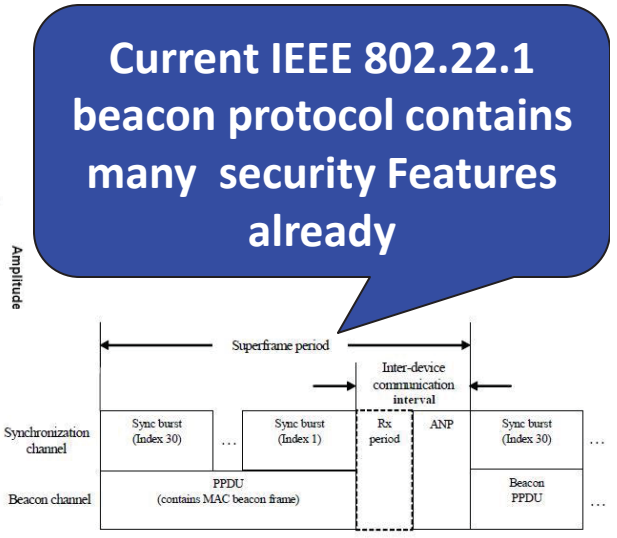
How will it Work: The designed beacon will contain ***Peace Time*** temporal patterns of the radars, which when combined with some universal time clock such as GPS can help commercial communications systems to use the empty time slots for their operation.

During ***Emergency Scenarios***, the beacon will send Urgent Co-existence request, to ask all the commercial systems to shut down immediately. Security features for such beacons are very important. IEEE Std, 802.22.1-2010™ has incorporated many such security mechanisms that may be applied to the 3550-3650 band relatively readily.





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